PENDING CLAIMS AS AMENDED

1.   (Currently Amended) A method of bandwidth estimation comprising:

receiving information defining a generating value of a filter;

generating a plurality of coefficients of the filter from the generating value;

obtaining a magnitude of an output of the filter to obtain a power measure of a received signal with respect to a selected frequency, said obtaining including multiplying each of the plurality of coefficients of the filter with a corresponding sample of the received signal; and

estimating a bandwidth of the received signal based on the power measure.

2.   (Original) The method of bandwidth estimation according to claim 1, wherein generating each of at least a subset of the plurality of coefficients includes rotating another of the plurality of coefficients by the generating value.

3.   (Original) The method of bandwidth estimation according to claim 2, wherein each of at least a subset of the plurality of coefficients is generated from the previously generated coefficient.

4.   (Original) The method of bandwidth estimation according to claim 1, wherein each of at least a subset of the plurality of coefficients is generated from the previously generated coefficient.

5.   (Original) The method of bandwidth estimation according to claim 1, wherein the generating value includes a phase vector of unit magnitude.

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6.   (Original) The method of bandwidth estimation according to claim 1, wherein the generating value includes a vector having a phase angle of magnitude $(2\pi k/N)$ radians, where k is the selected frequency, and

wherein the number of filter coefficients L is at most equal to N/2.

7.   (Original) The method of bandwidth estimation according to claim 6, wherein N is greater than one thousand, and

wherein the number of selected frequencies is at most equal to one hundred twenty-eight.

8.   (Original) The method of bandwidth estimation according to claim 1, wherein said generating a plurality of coefficients is performed at runtime.

9.   (Cancelled)

10.   (Original) The method of bandwidth estimation according to claim 1, wherein obtaining a power measure includes squaring an absolute value of the filter output.

11.   (Original) The method of bandwidth estimation according to claim 1, further comprising performing automatic gain control of the received signal.

12.   (Original) The method of bandwidth estimation according to claim 1, wherein said estimating a bandwidth of the received signal includes comparing the power measure to a predetermined threshold.

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13. (Original) The method of bandwidth estimation according to claim 1, further comprising estimating a relative velocity between a transmitter and a receiver based on a result of said estimating a bandwidth of the received signal.

14. (Original) The method of bandwidth estimation according to claim 1, further comprising estimating a speed of a mobile receiver based on a result of said estimating a bandwidth of the received signal.

15. (Original) The method of bandwidth estimation according to claim 1, further comprising modifying a passband of a second filter according to a result of said estimating a bandwidth of the received signal.

16. (Original) The method of bandwidth estimation according to claim 1, further comprising applying a windowing function to at least a subset of the coefficients of the filter.

17. (Currently Amended) A method of bandwidth estimation comprising:
obtaining a plurality of power measures of a received signal, each power measure corresponding to one of a plurality of selected frequencies; and
estimating a bandwidth of the received signal based on the power measures of the received signal,
wherein obtaining each of the plurality of power measures includes:
receiving information defining a generating value of a filter;
generating a plurality of coefficients of the filter from the generating value; and

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multiplying each of the coefficients of the filter with a corresponding sample of the received signal; and

comparing a relation between at least two of the power estimates to a predetermined threshold.

18. (Original) The method of bandwidth estimation according to claim 17, wherein at least one of the power measures corresponds to a selected frequency that is outside of an expected bandwidth of the received signal.

19. (Original) The method of bandwidth estimation according to claim 18, wherein said estimating a bandwidth of the received signal includes modifying at least a subset of the plurality of power measures based on the at least one power measure that corresponds to a selected frequency that is outside of an expected bandwidth of the received signal.

20. (Original) The method of bandwidth estimation according to claim 17, wherein said estimating a bandwidth of the received signal includes determining the greatest selected frequency for which the corresponding power estimate is greater than a predetermined threshold.

21. (Cancelled).

22. (Currently Amended) The method of bandwidth estimation according to claim 17 ~~21~~, wherein said estimating a bandwidth of the received signal includes comparing a second relation between at least two of the power estimates to a predetermined second threshold.

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23.   (Original) The method of bandwidth estimation according to claim 17, wherein, for each of the plurality of power measures, generating each of at least a subset of the plurality of coefficients of the filters includes rotating another of the plurality of coefficients by the generating value.

24.   (Original) The method of bandwidth estimation according to claim 23, wherein, for each of the plurality of power measures, each of at least a subset of the coefficients of the filter is generated from the previously generated coefficient.

25.   (Original) The method of bandwidth estimation according to claim 17, wherein, for each of the plurality of power measures, each of at least a subset of the coefficients of the filter is generated from the previously generated coefficient.

26.   (Original) The method of bandwidth estimation according to claim 17, wherein, for each of the plurality of power measures, the generating value defines a vector having a phase angle of magnitude $(2\pi k/N)$ radians, where k is the selected frequency, and
        wherein the number of filter coefficients is at most equal to N/2.

27,   (Original) The method of bandwidth estimation according to claim 26, wherein, for at least one of the plurality of power measures, N is greater than one thousand, and
        wherein the number of selected frequencies is at most equal to one hundred twenty-eight.

28.   (Currently Amended) A method of bandwidth estimation comprising:
        calculating at least one coefficient of at least one of a plurality of filters from another coefficient of the filter;

nonuniformly sampling a frequency spectrum of a received signal at a plurality of selected frequencies by filtering the received signal with the plurality of filters, each filter being centered about one of the plurality of selected frequencies;

determining a plurality of power measures of the received signal, each power measure being relative to one of the plurality of selected frequencies; and

obtaining an estimate of the bandwidth of the received signal, said estimate based at least in part on the power measures of the received signal.

29. (Cancelled).

30. (Cancelled).

31. (Currently Amended) The method of bandwidth estimation according to claim 28 29, wherein, for at least one of the plurality of filters, at least a subset of the coefficients of the filter are based on a vector having a phase angle of magnitude ($2\pi k/N$) radians, where k is the selected frequency, and

wherein the number of coefficients of the filter is at most equal to N/2.

32. (Original) The method of bandwidth estimation according to claim 31, wherein N is greater than one thousand, and

wherein the number of selected frequencies is at most equal to one hundred twenty-eight.

33. (Original) A filter comprising:

a lookup table configured and arranged to store a plurality of generating values;

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a first multiplier configured and arranged to receive a selected one of the generating values and a current filter coefficient and to output a subsequent filter coefficient;

an accumulator configured and arranged to receive and store the subsequent filter coefficient;

a second multiplier configured and arranged to multiply the current filter coefficient with a corresponding one of a series of samples of a received signal and to output a current filtered value; and

an adder configured and arranged to receive the current filtered value and a past filtered value and to output an accumulation signal.

34. (Original) The filter according to claim 33, wherein the accumulator is configured and arranged to store an initial value of one.

35. (Original) The filter according to claim 33, further comprising a storage element configured and arranged to store a value of the accumulation signal in response to a latching signal,

wherein the latching signal has a predetermined time relation to the initialization signal.

36. (Original) The filter according to claim 33, further comprising a power calculator configured and arranged to output a power measure based on a value of the accumulation signal.

37. (Original) A system for bandwidth estimation comprising:

a lookup table configured and arranged to store a plurality of generating values;

a plurality of filters, each filter including

a first multiplier configured and arranged to receive a selected one of the generating values and a current filter coefficient and to output a subsequent filter coefficient,

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an accumulator configured and arranged to receive and store the subsequent filter coefficient,

a second multiplier configured and arranged to multiply the current filter coefficient with a corresponding one of a series of samples of a received signal and to output a current filtered value,

an adder configured and arranged to receive the current filtered value and a past filtered value and to output an accumulation signal, and

a power calculator configured and arranged to output a power measure based on a value of the accumulation signal; and

a bandwidth estimator configured and arranged to receive the power measures of the plurality of filters and to output an estimate of the bandwidth of the received signal.

38.   (Original) The system for bandwidth estimation according to claim 37, wherein the bandwidth estimator is configured and arranged to compare a relation between at least two of the power measures to a predetermined threshold.

39.   (Original) The system for bandwidth estimation according to claim 37, wherein at least one of the power measures corresponds to a frequency that is outside of an expected bandwidth of the received signal, and

wherein the bandwidth estimator is configured and arranged to modify at least a subset of the power measures based on the at least one power measure that corresponds to a frequency that is outside of an expected bandwidth of the received signal.

40.   (Original) The system for bandwidth estimation according to claim 37, further comprising a relative velocity estimator configured and arranged to output a relative velocity estimate based on the estimate of the bandwidth of the received signal.